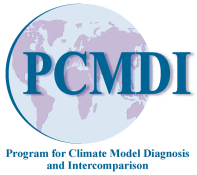
Asian Summer Monsoon Intraseasonal Variability in ECHAM4/OPYC and the IPCC AR4 Models



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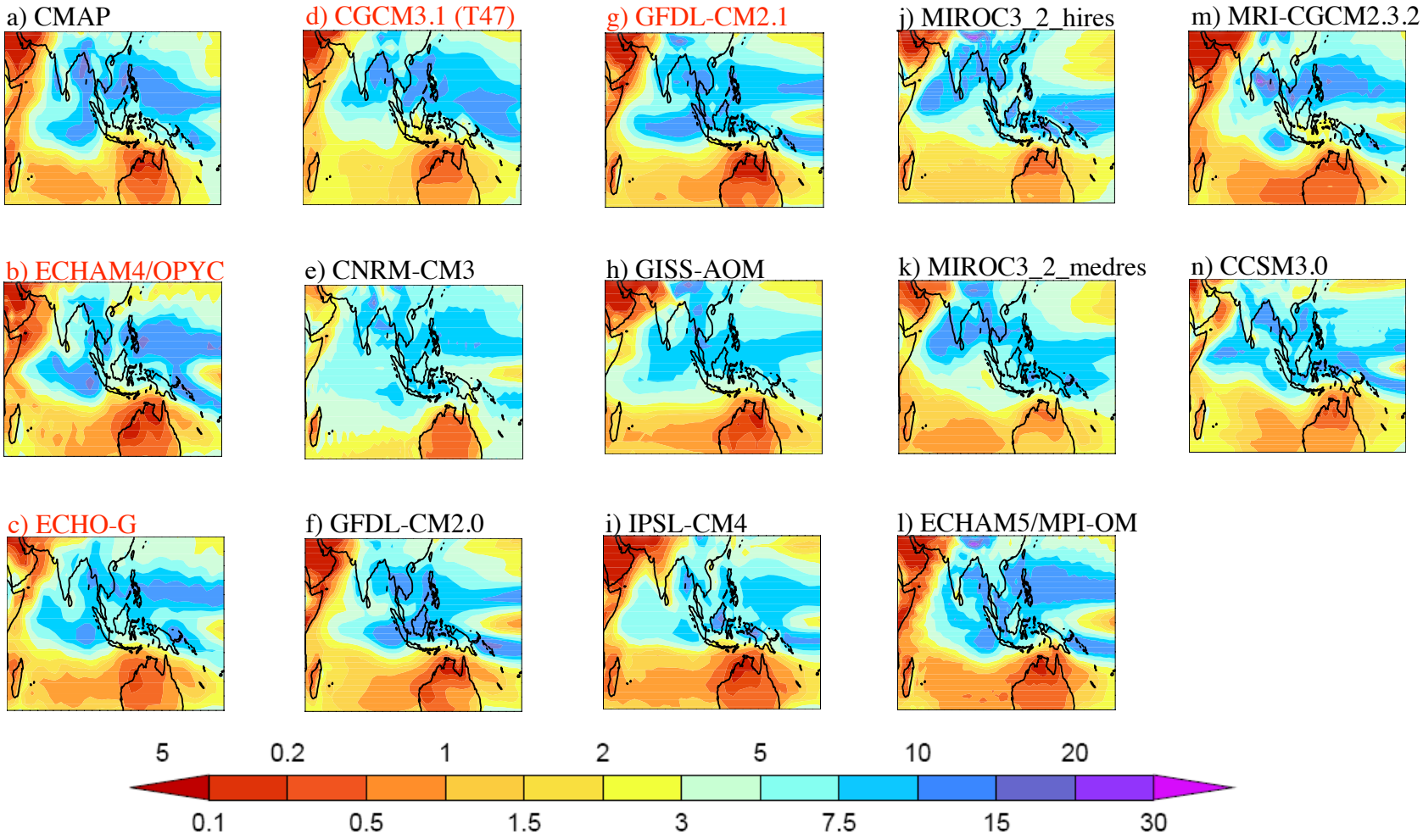
Boreal Summer Rainfall Climatology (mm day^{-1})

Program for Climate Model Diagnosis and Intercomparison

- **Over the domain 57.5°E-160.0°E, 12.5°S-30.0°N the highlighted models have pattern correlations with CMAP >0.7**



Boreal Summer Intraseasonal Variability (BSISV): Cyclostationary EOF (CsEOF)

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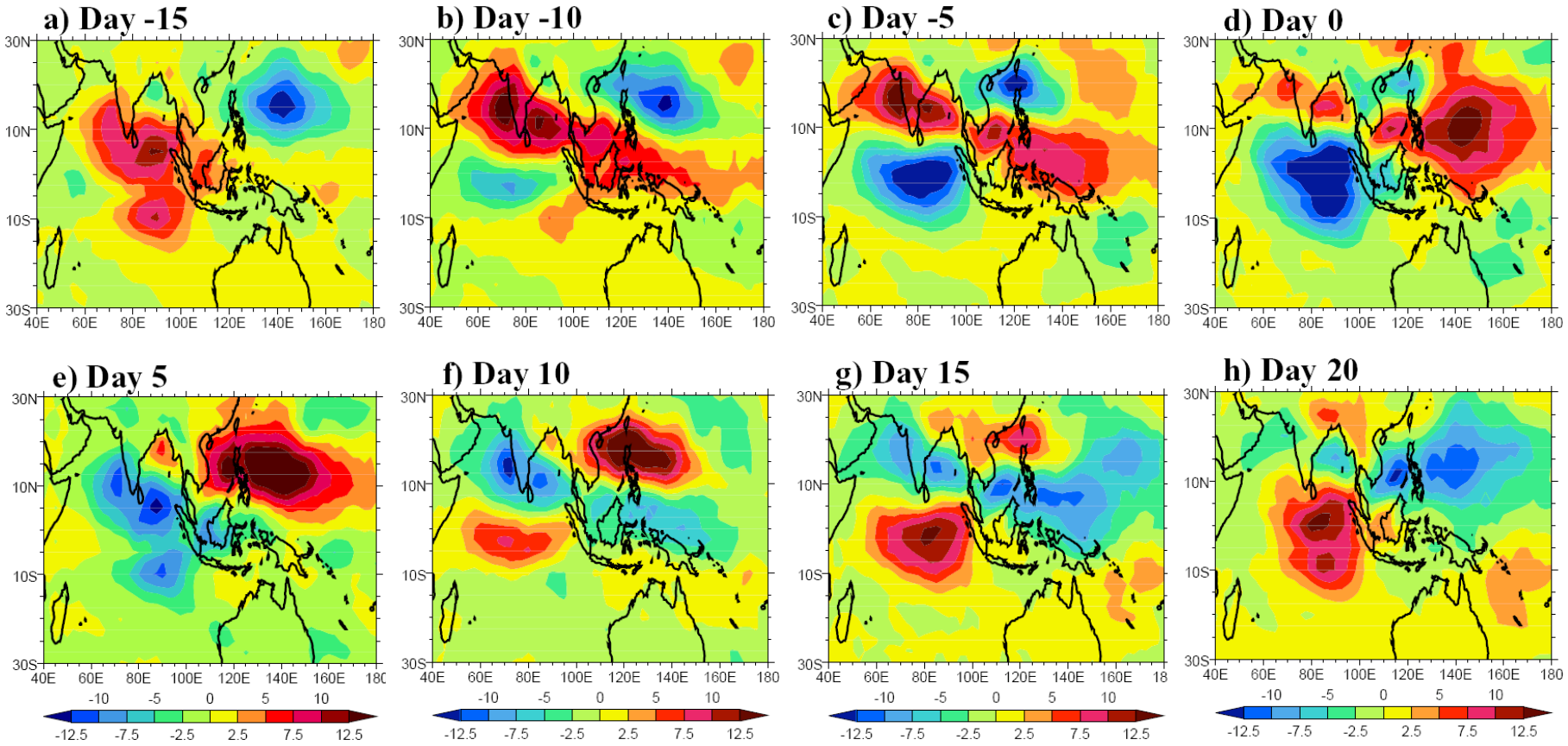
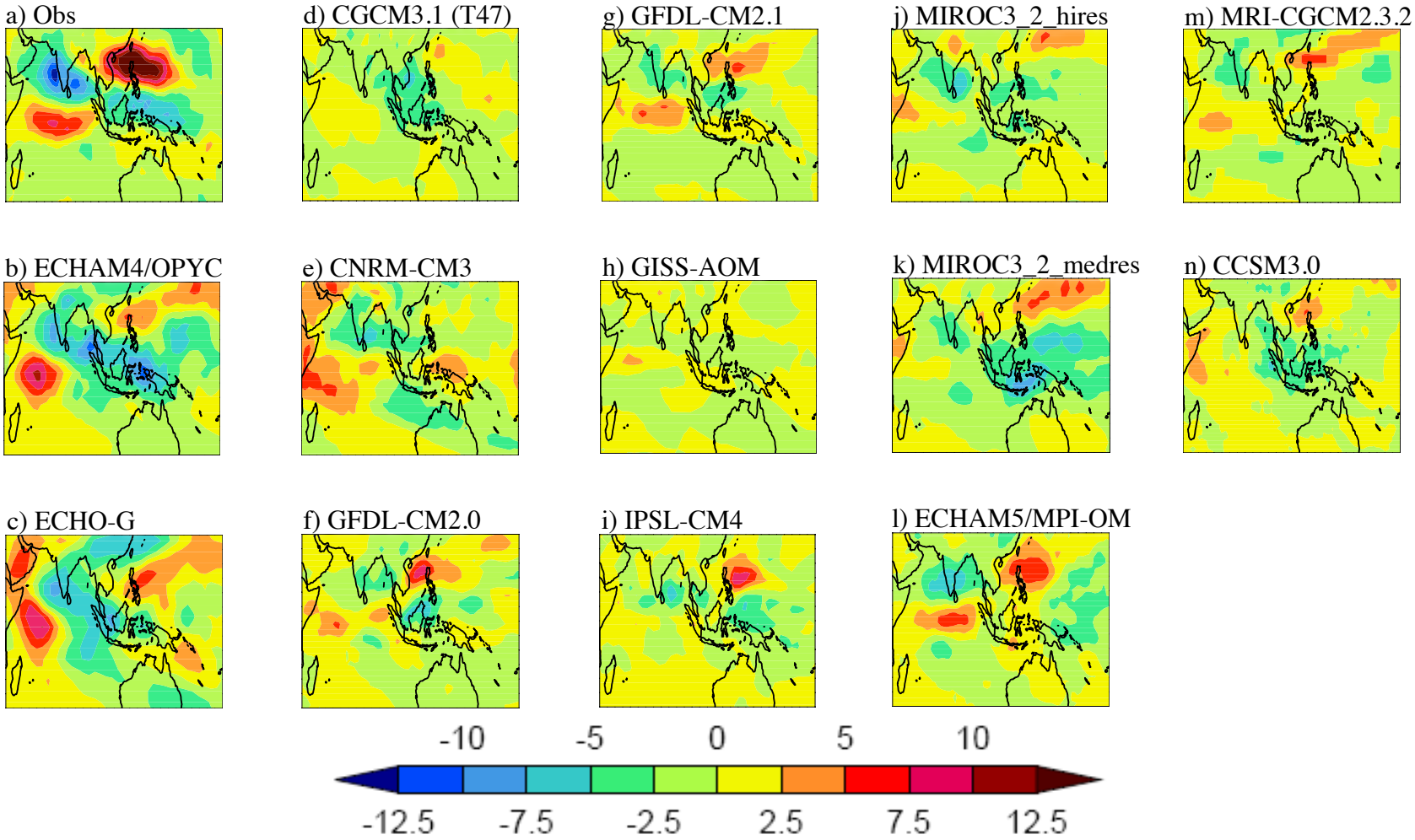
- **Eastward and northward propagating OLR anomalies (Annamalai and Sperber 2005, *JAS*, 2726-2748)**



Boreal Summer Intraseasonal Variability (BSISV): The Tilted Rainband (Day 10)

Program for Climate Model Diagnosis and Intercomparison

- **Compared to the GCMs analyzed by Waliser et al. (2003) the newer coupled models are better at representing the BSISV**



Conclusions

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- **Models with a more realistic time-mean state tend to have a better simulation of the BSISV**
  - the boreal summer eastward propagation develops and progresses by the same mechanisms as during the boreal winter
  - the eastward propagation of convection appears to be a pre-requisite for the northward propagation of convection
  - there is evidence that low-level moisture convergence plays a role in the northward propagation of convection near India but not over the BoB
  - lack of sensitivity to horizontal and vertical resolution (MIROC3.2)
- **The BSISV is a mutually interactive system**
  - conditions over the west Pacific affect those over the Indian Ocean and vice-versa (e.g., the development of convection over the tropical west Pacific heralds the onset of break monsoon over India)
- **There has been improvement in the ability of models to simulate the eastward and northward propagating convective signals compared to the previous AGCMs**
  - this could be due to the inclusion of air-sea interaction and/or improved model physics though there is still wide-scope for improvement